

CASP Checklist: 11 questions to help you evaluate a clinical prediction rule

How to use this appraisal tool: Three broad issues need to be considered when appraising a clinical prediction rule study:

-  Are the results of the study valid? (Section A)
-  What are the results? (Section B)
-  Will the results help locally? (Section C)

The 10 questions on the following pages are designed to help you think about these issues systematically. The first two questions are screening questions and can be answered quickly. If the answer to both is “yes”, it is worth proceeding with the remaining questions. There is some degree of overlap between the questions, you are asked to record a “yes”, “no” or “can’t tell” to most of the questions. A number of italicised prompts are given after each question. These are designed to remind you why the question is important. Record your reasons for your answers in the spaces provided.

About: These checklists were designed to be used as educational pedagogic tools, as part of a workshop setting, therefore we do not suggest a scoring system. The core CASP checklists (randomised controlled trial & systematic review) were based on JAMA 'Users' guides to the medical literature 1994 (adapted from Guyatt GH, Sackett DL, and Cook DJ), and piloted with health care practitioners.

This material has been developed by CASP España (CASPe) <http://redcaspe.org> it was translated into English and tested by the Critical Appraisal Skills Programme, Oxford, UK (CASP)

Referencing: we recommend using the Harvard style citation, i.e.: *Critical Appraisal Skills Programme (2018). CASP (insert name of checklist i.e. Clinical Prediction Rule) Checklist. [online] Available at: URL. Accessed: Date Accessed.*

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Paper for appraisal and reference:

Section A: Are the results of the study valid?

1. Is the CPR clearly defined?

Yes	<input type="checkbox"/>
Can't Tell	<input type="checkbox"/>
No	<input type="checkbox"/>

HINT:

- is the type of patients to whom the CPR will be applied clearly defined
- are the variables included in the rule clearly defined
- is the outcome relevant and is it clinically reasonable (the outcome can be expressed as a probability or as a course of action)

Comments:

2. Did the population from which the rule was derived include an appropriate spectrum of patients?

Yes	<input type="checkbox"/>
Can't Tell	<input type="checkbox"/>
No	<input type="checkbox"/>

HINT: Consider

- Is it adequate the way the patients were selected
- The spectrum of patient, to whom the rule will apply, is represented well

Comments:

3. Was the rule validated in a different group of patients?

Yes	<input type="checkbox"/>
Can't Tell	<input type="checkbox"/>
No	<input type="checkbox"/>

HINT:

- it's not good enough that the rule had a good performance on the patient group used to derive it. The rule should be validated in a different set of patients
- the validation was done in a group of patients similar to the one used to derive it

Comments:

Is it worth continuing?

4. Were the predictor variables and the outcome evaluated in a blinded fashion?

Yes	<input type="checkbox"/>
Can't Tell	<input type="checkbox"/>
No	<input type="checkbox"/>

HINT:

- did people evaluating the outcome know the predictor variables
- did people evaluating the predictor variables know the outcome

Comments:

5. Were the predictor variables and the outcome evaluates in the whole sample selected initially?

Yes	<input type="checkbox"/>
Can't Tell	<input type="checkbox"/>
No	<input type="checkbox"/>

HINT:

- are exclusions and drop outs well described and do the authors discuss the reasons for them
- sometimes the outcome cannot be measured in the same way in all patients

Comments:

6. Are the statistical methods used to construct and validate the rule clearly described?

Yes	<input type="checkbox"/>
Can't Tell	<input type="checkbox"/>
No	<input type="checkbox"/>

HINT:

- were all important variables included and the positivity criteria explained
- is the statistical method adequately described
- was the reliability of the rule considered

Comments:

Section B: What are the results?

7. Can the performance of the rule be calculated?

HINT:

- performance results can be presented as: Sens, Sp, +LR, -LR, ROC curve, calibration curves etc.
- sensitivity = $a/(a+c)$
- specificity = $d/(b+d)$
- LR+ = $\text{sens}/(1-\text{sp})$
- LR- = $(1-\text{sens})/\text{sp}$

	Outcome +	Outcome -
Rule +	a	b
Rule -	c	d

Comments:

8. How precise was the estimate of the treatment effect?

HINT: Think about

- the sample size and the number of variables included in the CPR
- is the rule robust, has there been any attempt to refine it

(did they try to refine the rule with other variables to see whether the precision could be improved or the rule simplified?)

Comments:

Section C: Will the results help locally? Are the findings applicable to the scenario?

9. Would the prediction rule be reliable and the results interpretable if used for your patient?

Yes	<input type="checkbox"/>
Can't Tell	<input type="checkbox"/>
No	<input type="checkbox"/>

- HINT: Consider
- is your setting too different from that of the study

Comments:

10. Is the rule acceptable in your case?

Yes	<input type="checkbox"/>
Can't Tell	<input type="checkbox"/>
No	<input type="checkbox"/>

- HINT: Consider
- the ease of use and the availability of the rule and the costs
 - if the rule is reasonable from a clinical point of view

Comments:

11. Would the results of the rule modify your decision about the management of the patient, or the information you can give to him/her?

Yes	<input type="checkbox"/>
Can't Tell	<input type="checkbox"/>
No	<input type="checkbox"/>

- HINT: Consider
- in addition to your opinion, might there be studies analysing the impact (in monetary terms or health results) of the rule
 - if nothing will change, the rule is at best useless in terms of benefit to the patients
 - how the initial estimation has changed after applying the rule, and the effect it has had on the action threshold

Comments: